

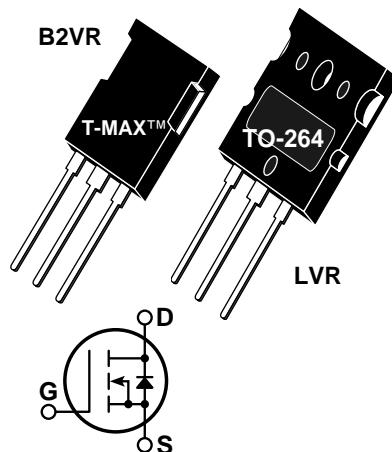


APT12060B2VR
APT12060LVR
1200V 20A 0.600Ω

POWER MOS V®

Power MOS V® is a new generation of high voltage N-Channel enhancement mode power MOSFETs. This new technology minimizes the JFET effect, increases packing density and reduces the on-resistance. Power MOS V® also achieves faster switching speeds through optimized gate layout.

- Identical Specifications: T-MAX™ or TO-264 Package
- Faster Switching
- Lower Leakage
- 100% Avalanche Tested



MAXIMUM RATINGS

All Ratings: $T_C = 25^\circ\text{C}$ unless otherwise specified.

Symbol	Parameter	APT12060	UNIT
V_{DSS}	Drain-Source Voltage	1200	Volts
I_D	Continuous Drain Current @ $T_C = 25^\circ\text{C}$	20	Amps
I_{DM}	Pulsed Drain Current ①	80	
V_{GS}	Gate-Source Voltage Continuous	± 30	Volts
V_{GSM}	Gate-Source Voltage Transient	± 40	
P_D	Total Power Dissipation @ $T_C = 25^\circ\text{C}$	625	Watts
	Linear Derating Factor	5.0	W/ $^\circ\text{C}$
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to 150	$^\circ\text{C}$
T_L	Lead Temperature: 0.063" from Case for 10 Sec.	300	
I_{AR}	Avalanche Current ① (Repetitive and Non-Repetitive)	20	Amps
E_{AR}	Repetitive Avalanche Energy ①	50	
E_{AS}	Single Pulse Avalanche Energy ④	3000	mJ

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
BV_{DSS}	Drain-Source Breakdown Voltage ($V_{GS} = 0V, I_D = 250\mu\text{A}$)	1200			Volts
$I_{D(on)}$	On State Drain Current ② ($V_{DS} > I_{D(on)} \times R_{DS(on)}$ Max, $V_{GS} = 10V$)	20			Amps
$R_{DS(on)}$	Drain-Source On-State Resistance ② ($V_{GS} = 10V, 0.5 I_{D[Cont.]}$)			0.600	Ohms
I_{DSS}	Zero Gate Voltage Drain Current ($V_{DS} = V_{DSS}, V_{GS} = 0V$)			25	μA
	Zero Gate Voltage Drain Current ($V_{DS} = 0.8 V_{DSS}, V_{GS} = 0V, T_C = 125^\circ\text{C}$)			250	
I_{GSS}	Gate-Source Leakage Current ($V_{GS} = \pm 30V, V_{DS} = 0V$)			± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage ($V_{DS} = V_{GS}, I_D = 2.5\text{mA}$)	2		4	Volts

CAUTION: These Devices are Sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed.

APT Website - <http://www.advancedpower.com>

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DYNAMIC CHARACTERISTICS

APT12060 B2VR - LVR

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
C_{iss}	Input Capacitance	$V_{GS} = 0V$ $V_{DS} = 25V$ $f = 1\text{ MHz}$		7580		pF
C_{oss}	Output Capacitance			610		
C_{rss}	Reverse Transfer Capacitance			290		
Q_g	Total Gate Charge ③	$V_{GS} = 10V$ $V_{DD} = 0.5 V_{DSS}$ $I_D = 0.5 I_{D[\text{Cont.}]} @ 25^\circ\text{C}$		370		nC
Q_{gs}	Gate-Source Charge			33		
Q_{gd}	Gate-Drain ("Miller") Charge			170		
$t_{d(on)}$	Turn-on Delay Time	$V_{GS} = 15V$ $V_{DD} = 0.5 V_{DSS}$ $I_D = I_{D[\text{Cont.}]} @ 25^\circ\text{C}$ $R_G = 0.6\Omega$		18		ns
t_r	Rise Time			13		
$t_{d(off)}$	Turn-off Delay Time			66		
t_f	Fall Time			14		

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
I_S	Continuous Source Current (Body Diode)			20	Amps
I_{SM}	Pulsed Source Current ① (Body Diode)			80	
V_{SD}	Diode Forward Voltage ② ($V_{GS} = 0V, I_S = I_{D[\text{Cont.}]}$)			1.3	Volts
t_{rr}	Reverse Recovery Time ($I_S = -I_{D[\text{Cont.}]} , dI_S/dt = 100A/\mu\text{s}$)		1190		ns
Q_{rr}	Reverse Recovery Charge ($I_S = -I_{D[\text{Cont.}]} , dI_S/dt = 100A/\mu\text{s}$)		25.5		μC

THERMAL CHARACTERISTICS

Symbol	Characteristic	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to Case			0.20	°C/W
$R_{\theta JA}$	Junction to Ambient			40	

① Repetitive Rating: Pulse width limited by maximum junction temperature.

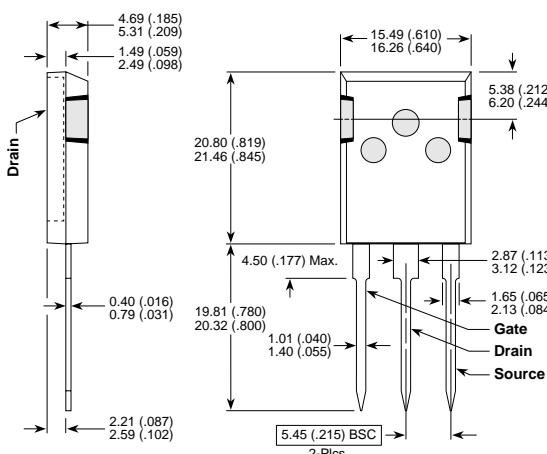
③ See MIL-STD-750 Method 3471

② Pulse Test: Pulse width < 380 μs , Duty Cycle < 2%

④ Starting $T_j = +25^\circ\text{C}$, $L = 15\text{mH}$, $R_G = 25\Omega$, Peak $I_L = 20\text{A}$

APT Reserves the right to change, without notice, the specifications and information contained herein.

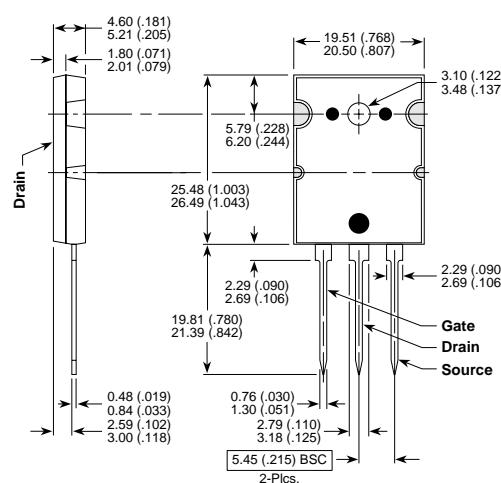
T-MAX™ (B2) Package Outline



These dimensions are equal to the TO-247 without the mounting hole.

Dimensions in Millimeters and (Inches)

TO-264 (L) Package Outline



Dimensions in Millimeters and (Inches)